



# **TASK ORDER**

## **47QFCA20F0019**

### **Integrated Multi-Domain Command and Control (IMDC2) Technical Support**

**in support of:**

### **Remote Sensing Center (RSC) – National Capital Region (NCR)**

**Awarded to:**

**Science Applications International Corporation (SAIC)  
12010 Sunset Hills Road  
Reston, VA 20190  
OASIS Contract No. GS00Q14OADU130**

**Conducted under Federal Acquisition Regulation (FAR) 16.505**

**Issued by:**

**The Federal Systems Integration and Management Center (FEDSIM)  
1800 F Street, NW (QF0B)  
Washington, D.C. 20405**

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**FEDSIM Project Number DE0108**

## SECTION C – PERFORMANCE WORK STATEMENT

### **C.1 BACKGROUND**

Multi-domain operations are currently conducted in a piecemeal manner among the various Department of Defense (DoD) organizations (e.g., Joint Staff Intelligence (J2), Joint Staff Operations (J3), Combatant Command (COCOMs), Military Departments); but the systems utilized were not designed for these purposes. This fragmented approach has created problems for the DoD, including manpower-intensive coordination for surge operations, operational shortcomings in contested space and cyber domains, and force integration requiring substantial leadership involvement. The reasons include insufficient situational awareness, collaboration, and decision-support tools; limited expertise with multi-domain planning; and stovepiped mission data streams.

#### **C.1.1 PURPOSE**

The purpose of the Integrated Multi-Domain Command and Control (IMDC2) Technical Support program is to achieve cross-domain synergy and seamless integration to provide the DoD with resilient, survivable, federated networks, and information ecosystems from the tactical up to the strategic level. The focus is on gaining and exploiting information, denying competitors those same advantages, and enabling the DoD to attribute non-kinetic operations (below the level of armed conflict) and to hold accountable adversaries attempting to exploit deniability of their involvement in such operations. The DoD requires the integration of air, space, and cyber capabilities to optimize multi-domain operations, planning, and effects. To enhance situational awareness and accelerate decision-making, the DoD requires development, fielding, and sustainment of cloud-based data structures, common infrastructure to enable new Command and Control (C2) mission applications, rapid technology refresh, and enhanced support tools.

#### **C.1.2 AGENCY MISSION**

The Remote Sensing Center (RSC) is an interdisciplinary research group chartered under the Dean of Research at the Naval Postgraduate School (NPS). The RSC office in the National Capital Region (RSC-NCR) interacts with DoD, Intelligence Community (IC), and other U.S. Government mission partners to understand requirements, discover cutting-edge technologies (in Government, commercial, academic, and non-profit sectors), and bring real-world examples to NPS. It provides enhanced training, education, thesis focus, and application as well as viable and unique solutions to the Remote Sensing Community. The RSC-NCR also brings technical and programmatic expertise together to enable DoD and IC mission partners to achieve their mission. The majority of supported projects involve emerging or future needs that require forward-looking and quick-reaction capabilities. The RSC-NCR is a mission-enabler with the tools and skill sets to support needs at the tempo they emerge. In addition, the RSC-NCR supports research, programmatic, and execution effort with DoD and IC mission partners.

### **C.2 SCOPE**

Under this TO, Multi-Domain Command and Control (MDC2) capabilities will be provided to RSC-NCR and its mission partners with integration of existing technologies resulting in improved processing, cybersecurity, hardware and software, exploitation, and C2 capabilities. This support will improve the Government's ability to: process, exploit, disseminate, and act on

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information against emerging and evolving threats; eliminate or minimize technological obsolescence; and reduce total lifecycle costs associated with MDC2 systems.

This TO will support RSC-NCR and its mission partners by rapidly developing MDC2 capability and testing multi-domain concepts to provide warfighters and support elements across all services and domains a common C2 platform to leverage disparate data sources and synchronize cross-domain effects.

This TO will also utilize experimentation and prototyping focused on testing and developing enterprise solutions for the common enablers of data, network, and link capability. It will explore advanced technology and leverage agile acquisition to rapidly operationalize MDC2 tools and capabilities, including building network capability through data virtualization.

Mission partners, as referenced in this requirement, include Department of Homeland Security (DHS); Director of National Intelligence (DNI) agencies; Office of the Secretary of Defense (OSD); Combatant Commands (COCOMs), including U.S. Africa Command (USAFRICOM), U.S. Central Command (USCENTCOM), U.S. European Command (USEUCOM), U.S. Indo-Pacific Command (USINDOPACOM), U.S. Northern Command (USNORTHCOM), U.S. Southern Command (USSOUTHCOM), U.S. Special Operations Command (USSOCOM), U.S. Strategic Command (USSTRATCOM), and U.S. Transportation Command (USTRANSCOM); and assigned and associated service components (e.g., U.S. Army, U.S. Air Force (USAF), U.S. Navy (USN), U.S. Marine Corps (USMC)).

Purchasing of weapons systems is not within scope of this TO. Use of weapons systems, other than as it relates to the analytical and technical support described in Section C, is not within scope of this TO. Construction is not within scope of this TO.

### **C.3 CURRENT ENVIRONMENT**

The adversaries of the U.S. have analyzed our systems, capabilities, and tactics in an attempt to minimize our advantage in every domain. Reliance on timely cross-domain information sharing between separate air, land, maritime, space, and cyber operations centers does not serve the current or future needs of warfighters. MDC2 has emerged as the ability to seamlessly analyze, fuse, and share domain-centric information in a single C2 system that supports all domains and all levels of kinetic and non-kinetic challenges. The 2018 National Defense Strategy is the driving logic behind DoD's planned FY 2019-FY 2023 program, accelerating its priority capability investments in a sustained effort to solidify DoD's competitive advantage.

A list of current projects that require support and planned future projects can be found in Section J, Attachment U.

### **C.4 OBJECTIVE**

The objective of the TO is to improve MDC2 capabilities through the integration of existing technologies. This integration shall improve processing, cybersecurity, hardware and software, exploitation, and C2 capabilities. This support will improve the Government's ability to: process, exploit, disseminate, and act on information against emerging and evolving threats; eliminate or minimize technological obsolescence; and reduce total lifecycle costs associated with MDC2 systems.

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### **C.5 TASKS**

RSC-NCR priorities are heavily contingent on activity primarily driven by war, terrorism, and/or threat situations that can change, depending on the nature of the intelligence received. As global dynamics shift and U.S. priorities within the MDC2 mission areas shift, the contractor must adapt. The following tasks cover the scope of work for IMDC2 Technical Support. The Government will utilize Technical Direction Letters (TDLs) (Section H.21) to organize and track individual in-scope projects under the IMDC2 TO. The FEDSIM CO will provide written confirmation and approval that each TDL is within the IMDC2 TO scope of requirements. For each TDL, the RSC-NCR and its mission partners will nominate RSC-NCR Alternate Technical Points of Contact (ATPOCs) who will be designated by the FEDSIM CO. These ATPOCs will lead the TDL Integrated Project Teams and serve as the Government liaison for project management, Research and Development (R&D), and engineering aspects of the project from inception to completion. The contractor shall provide all expertise and services as stated in the TO to deliver the integrated professional services.

TDLs will be initiated at varying times within a period of performance, consisting of various appropriation types (e.g., one-year, two-year, or no-year), depending on the bona fide need. Below is a summary of the Tasks associated with Section C.

- a. Task 1 – Provide Program Management
- b. Task 2 – Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance, and Reconnaissance (C5ISR)
- c. Task 3 – Systems Engineering
- d. Task 4 – Engineering, Integration, Services, and Sustainment for Virtual Training and Analytic Systems
- e. Task 5 – Policy, Technical, and Research Support

The Lines of Effort (LOE) Descriptions Table is listed in Section J, Attachment I to provide a description of the horizontal, integrating elements of MDC2 that couple to the vertical tasks throughout C.5.

#### **C.5.1 TASK 1 – PROVIDE PROGRAM MANAGEMENT**

The contractor shall provide TO program management. This includes the management and oversight of all activities performed by contractor personnel, including subcontractors, to satisfy the requirements identified in this PWS.

Much of the work performed under this TO will consist of multiple projects, sponsored by one or more of the organizations supported by RSC-NCR. The contractor shall provide project management to each individual effort, while also providing integrated program management to the entire scope of work under Section C.

##### **C.5.1.1 SUBTASK 1 – ACCOUNTING FOR CONTRACTOR MANPOWER REPORTING**

The contractor shall report ALL contractor labor hours (including subcontractor labor hours) required for performance of services provided under this TO via a secure data collection site the Enterprise Contractor Manpower Reporting Application (ECMRA). The contractor shall

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completely fill in all required data fields using the following web address:  
<http://www.ecmra.mil/>.

Reporting inputs will be for the labor executed during the period of performance during each Government Fiscal Year (FY), which runs October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year. Contractors may direct questions to the support desk at: <http://www.ecmra.mil/>.

Contractors may use Extensible Markup Language (XML) data transfer to the database server or fill in the fields on the website. The XML direct transfer is a format for transferring files from a contractor's systems to the secure website without the need for separate data entries for each required data element at the website. The specific formats for the XML direct transfer may be downloaded from the web.

### **C.5.1.2 SUBTASK 2 – COORDINATE A PROJECT KICK-OFF MEETING**

The contractor shall schedule, coordinate, and host a Project Kick-Off Meeting at the location approved by the Government (Section F.3, Deliverable 02). The meeting shall provide an introduction between the contractor personnel and Government personnel who will be involved with the TO. The meeting shall provide the opportunity to discuss technical, management, and security issues, and travel authorization and reporting procedures. At a minimum, the attendees shall include the FEDSIM CO, contractor Key Personnel, representatives from RSC-NCR, other key Government personnel, the RSC-NCR Technical Point of Contact (TPOC), and the FEDSIM COR.

At least three days prior to the Kick-Off Meeting, the contractor shall provide a Kick-Off Meeting Agenda (Section F.3, Deliverable 01) for review and approval by the FEDSIM COR and the RSC-NCR TPOC prior to finalizing. The agenda shall include, at a minimum, the following topics/deliverables:

- a. Points of Contact (POCs) for all parties.
- b. Program management discussion, including schedule, tasks, etc.
- c. Personnel discussion (i.e., roles and responsibilities and lines of communication between contractor and Government).
- d. Staffing Plan and status.
- e. Transition-In Plan (Section F.3, Deliverable 04) and discussion.
- f. Security discussion and requirements (i.e., building access, badges, Common Access Cards (CACs).
- g. Financial forecasting/tracking and invoicing requirements (Section C.5.1.4 and Section G.3).
- h. Baseline Quality Control Plan (QCP).

The Government will provide the contractor with the number of Government participants for the Kick-Off Meeting, and the contractor shall provide sufficient copies of the presentation for all present.

The contractor shall draft and provide a Kick-Off Meeting Minutes Report (Section F.3, Deliverable 03) documenting the Kick-Off Meeting discussion and capturing any action items.

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### **C.5.1.3 SUBTASK 3 – PREPARE A MONTHLY STATUS REPORT (MSR)**

The contractor shall develop and provide an MSR (Section J, Attachment F) (Section F.3, Deliverable 07). The MSR shall include the following:

- a. Activities during reporting period, by task (include ongoing activities, new activities, activities completed, and progress to date on all above mentioned activities). Each section shall start with a brief description of the task.
- b. Problems and corrective actions taken. Also include issues or concerns and proposed resolutions to address them.
- c. Personnel gains, losses, and status (security clearance, etc.).
- d. Government actions required.
- e. Schedule (show major tasks, milestones, and deliverables; planned and actual start and completion dates for each).
- f. Summary of trips taken, conferences attended, etc. (attach Trip Reports to the MSR for reporting period).
- g. Accumulated invoiced cost for each CLIN up to the previous month.
- h. Projected cost of each CLIN for the current month,
- i. Progress toward small business utilization.
- j. Project cost reporting. Accumulated and projected cost for each TDL in terms of labor categories, hours, and ODCs.
- k. An updated schedule and Work Breakdown Structure (WBS) for each independent prototype or training project.

### **C.5.1.4 SUBTASK 4 – FINANCIAL FORECASTING AND TRACKING**

The Government anticipates that funding will be received from multiple sources and it will have to track financial data at the Military Interdepartmental Purchase Request (MIPR), funding source, or TDL level. The contractor shall work with the FEDSIM COR and RSC-NCR TPOC to determine, for each task or project, the level of financial tracking required. For each task or TDL, the contractor shall create a Financial Forecast (Section F.3, Deliverable 06) for each TO Period of Performance that details the anticipated monthly costs by CLIN. The contractor shall set the baseline at the start of each TO Period of Performance and update the forecasts monthly, at a minimum, as costs are incurred or as requirements change.

The contractor shall present a draft proposed format for the financial forecast at the TO Kick-Off meeting for FEDSIM COR and RSC-NCR TPOC approval and shall utilize the Government-approved format.

### **C.5.1.5 SUBTASK 5 – CONVENE TECHNICAL STATUS MEETINGS**

The contractor Program Manager (PM) shall convene a monthly Technical Status Meeting with the RSC-NCR TPOC, FEDSIM COR, and other Government stakeholders (Section F.3, Deliverable 08). The purpose of this meeting is to ensure all stakeholders are informed of the monthly activities, provide project status and MSR, provide opportunities to identify other activities and establish priorities, and coordinate resolution of identified problems or opportunities. The contractor PM shall provide minutes of these meetings, including attendance, issues discussed, decisions made, and action items assigned, to the FEDSIM COR (Section F.3, Deliverable 09).

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### **C.5.1.6 SUBTASK 6 – PREPARE AND UPDATE A PROJECT MANAGEMENT PLAN (PMP)**

The contractor shall document all support requirements in a PMP. The contractor shall provide a draft PMP (Section F.3, Deliverable 10) to the Government for review and comment. The Updated PMP (Section F.3, Deliverable 11) shall incorporate resolutions to the Government's comments.

The PMP shall:

- a. Describe the proposed management approach.
- b. Contain detailed Standard Operating Procedures (SOPs) for all tasks.
- c. Include milestones, tasks, and subtasks required in this TO.
- d. Provide for an overall WBS with a minimum of three levels and associated responsibilities and partnerships between Government organizations.
- e. Describe in detail the contractor's approach to risk management under this TO.
- f. Describe in detail the contractor's approach to communications, including processes, procedures, communication approach, and other rules of engagement between the contractor and the Government.
- g. Contain a Quality Control Plan (QCP).

The PMP is an evolutionary document that shall be updated annually at a minimum and as project changes occur. The contractor shall work from the latest Government-approved version of the PMP.

### **C.5.1.7 SUBTASK 7 – LESSONS LEARNED REPORTS**

The contractor shall submit lessons learned reports (Section F.3, Deliverable 12), as requested by the RSC-NCR TPOC and FEDSIM COR via email, to document any lessons learned during TO execution. The lessons learned reports shall:

- a. Identify the activity or experience.
- b. Identify the problem or success.
- c. Describe the impact of the problem or success.
- d. Provide a recommendation in response to the problem or success.

Lessons learned reports shall be submitted to the Joint Staff lessons learned database. Service components will also submit lessons learned to the service lessons learned database using the format outlined by the database.

### **C.5.1.8 SUBTASK 8 – PREPARE TRIP REPORTS**

The Government will identify the need for a Trip Report when the request for travel is submitted (Section F.3, Deliverable 13). The contractor shall keep a summary of all long-distance travel including, but not limited to, the name of the employee, location of travel, duration of trip, and POC at travel location. Trip reports shall also contain Government approval authority, total cost of the trip, a detailed description of the purpose of the trip, and any knowledge gained. At a minimum, trip reports shall be prepared with the information provided in Section J, Attachment G.

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### **C.5.1.9 SUBTASK 9 – BASELINE QUALITY CONTROL PLAN (QCP)**

The contractor shall provide a draft and final baseline QCP as required in Section F (Section F.3, Deliverable 14). The contractor shall periodically update the QCP, as required in Section F (Section F.3, Deliverable 15), as changes in program processes are identified.

Within the QCP, the contractor shall identify its approach for providing quality control in meeting the requirements of the TO. The contractor's QCP shall describe its quality control methodology for accomplishing TO performance expectations and objectives. The contractor shall fully discuss its validated processes and procedures that provide high-quality performance for each task. The QCP shall describe how the processes integrate with the Government's requirements.

### **C.5.1.10 SUBTASK 10 – PREPARE AND UPDATE TECHNICAL DIRECTION PLANS (TDPs)**

The contractor shall prepare and update a TDP in response to each FEDSIM CO-approved TDL IAW Section H.21 (Section F.3, Deliverable 38) within 10 business days or as specified in the approved TDL. The TDP is an evolutionary document and the contractor shall work from the latest Government-approved version of the TDP.

The TDP shall include:

- a. Project cost estimate (Rough Order of Magnitude (ROM)).
- b. Master Equipment List (MEL)/Bill of Materials (if applicable).
- c. Project schedule including milestones, tasks, and subtasks required in this project.
- d. Project staff and resources.
- e. An overall WBS.
- f. Project transition.
- g. TDP customer feedback plan.

The contractor shall host a Project Kick-Off Meeting for each approved TDL and shall provide a meeting agenda and meeting minutes.

### **C.5.1.11 SUBTASK 11 – TRANSITION-IN**

The contractor shall provide a Transition-In Plan as required in Section F (Section F.3, Deliverable 04). The contractor shall ensure that there will be minimum service disruption to vital Government business and no service degradation during and after transition with a focus on work that is noted as requiring a transition in Section J, Attachment U. The contractor shall begin implementing its Transition-In Plan No Later Than (NLT) three Government workdays after approval of the Final Transition-In Plan (Section F.3, Deliverable 05), and it is expected that all transition activities shall be completed 90 calendar days after approval of the Final Transition-In Plan (Section F.3, Deliverable 05), unless otherwise directed by the Government.

### **C.5.1.12 SUBTASK 12 – TRANSITION-OUT**

The contractor shall provide transition-out support when required by the Government. The Transition-Out Plan shall facilitate the accomplishment of a seamless transition from the incumbent to incoming contractor/Government personnel at the expiration of the TO. The contractor shall provide a Transition-Out Plan within six months of Project Start (PS) (Section



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F.3, Deliverable 16). The contractor shall review and update the Transition-Out Plan IAW the specifications in Sections E and F.

In the Transition-Out Plan, the contractor shall identify how it will coordinate with the incoming contractor and/or Government personnel to transfer knowledge regarding the following:

- a. Project management processes.
- b. POCs.
- c. Location of technical and project management documentation.
- d. Status of ongoing technical initiatives.
- e. Appropriate contractor-to-contractor coordination to ensure a seamless transition.
- f. Transition of Key Personnel.
- g. Schedules and milestones.
- h. Actions required of the Government.
- i. Transition of individual projects.

The contractor shall also establish and maintain effective communication with the incoming contractor/Government personnel for the period of the transition via weekly status meetings or as often as necessary to ensure a seamless transition-out.

The contractor shall implement its Transition-Out Plan NLT six months prior to expiration of the TO. Implementation of the Transition-Out Plan should not be less than six months prior to the end of the TO.

### **C.5.2 TASK 2 – COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, CYBER, INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE (C5ISR)**

The contractor shall provide technical support to integrated C5ISR systems that allow the DoD to execute missions effectively and efficiently. Through operationally-focused and intelligence-infused systems, the contractor shall support interoperability of capabilities within the DoD, services, DNI, DHS, and other partners. The contractor shall provide technical support to C5ISR systems that enable significant performance improvements over legacy systems, with superior situational awareness and strategic and tactical system integration.

#### **C.5.2.1 SUBTASK 1 – ENGINEERING, DEVELOPMENT, NETWORK SOFTWARE AND CYBER RESILIENCE**

The contractor shall:

- a. Provide technical support in developing solutions, software and hardware, and tools, and researching and implementing emerging technologies in intelligence analysis and automated analysis capabilities and tools and integration (Section F.3, Deliverable 17 and 18).
- b. Support all aspects of life-cycle software development including design, development, testing, implementation, sustainment, operations and modernization, for all mission-related purposes.
- c. Provide technical expertise in support of big data storage, processing, exploitation and dissemination.

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- d. Maintain an end-to-end information technology (IT) focus on data and analytics to provide cyber situational awareness capabilities, enable preventative and responsive cyber defense and automation, and to expand cyberspace operations.
- e. Effectively integrate and communicate operations with Coalition forces, and execute simultaneous multi-domain events. In addition, the contractor shall develop agile multi-domain enterprise applications using organic developers and work toward automated promotion of certified capability from development to operational environments.
- f. Develop enterprise data services and inform higher-level governance as applicable. In addition, the contractor shall assess database repository alternatives for multi-level security capability and Authority to Operate (ATO); establish core repeatable datasets for R&D validation and testing of artificial intelligence tools; and develop R&D and operational enclaves for automated promotion of capability to production at all classifications.
- g. Establish data cataloging (aligned with applicable data governance, data quality, and other data regulations and standards) and metadata standards; establish federated trust for enterprise stakeholders, consistent across classifications; create and implement multi-level and cross-domain security processes and governance; and define an object-based multi-domain target folder, containing object characteristics for each target in each domain.

### **C.5.2.2 SUBTASK 2 – AIR, SPACE, CYBER, INTELLIGENCE, & SPACE SITUATIONAL AWARENESS (SA)**

The contractor shall:

- a. Research vulnerabilities to US C2 and associated systems (including air, space, cyber, terrestrial, and maritime), and the potential for negative impact on national security, as well as the methods an adversary might use to offensively employ vulnerabilities.
- b. Support identification, prioritization and assessment of threats, vulnerabilities, and risks, and the identification of opportunities informing plans and actions across the doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy (DOTMLPF-P) spectrum.
- c. Research to understand adversary cyber, space, naval and air early-warning and tracking network nodes, vulnerabilities, modes of operation, transport mechanisms and data flow methodologies (Section F.3, Deliverable 19).
- d. Assess space situational awareness and effects on existing C2 links. Assess C2 capabilities in the space industrial base to identify technology gaps and research requirements. Provide capability and operational evaluation to refine near-term space situational awareness, including engineering, technical demonstration, and program management.
- e. Conduct operational evaluation, capability evaluation, shortfall/gap analysis, validation, documentation and the transition of space superiority and space control advanced concepts and tactics. The contractor shall identify service and warfighter cyber capability shortfalls and gaps through research, analysis, planning, targeting, observing, and reporting. In addition, the contractor shall perform rapid prototyping efforts to identify critical capability gaps, shortfalls and overlaps, and then support the mitigation of those gaps.

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- f. Provide full-spectrum offensive and defensive space control functional expertise spanning acquisitions and program planning, program management, contracting, financial management, systems engineering, integration and test, logistics, training, cybersecurity, system safety, modeling-simulation-analysis, architecture management, space operations engineering, anomaly resolution, and highly specialized technical subject matter expertise, including orbital mechanics, communications, signal processing, cybersecurity, and program/mission protection.

### **C.5.3 TASK 3 – SYSTEMS ENGINEERING**

The contractor shall provide engineering and system design support for the development and improvement of existing, evolving, and emerging C5ISR capabilities and systems. The contractor shall design capabilities, including alterations to existing systems; integration and enhancements to systems and other system component interfaces; and development and modifications to new and existing software systems.

#### **C.5.3.1 SUBTASK 1 – MODEL-BASED SYSTEMS ENGINEERING**

The contractor shall:

- a. Perform systems engineering that leverages models which represent and portray the entire engineering problem with a consistent language and lexicon to ensure the solution addresses all system requirements and uses a layered concept to address the components of the engineering effort. The desired result is effective solutions covering a broad range of customer needs (Section F.3, Deliverable 20).
- b. Incorporate key systems engineering functions such as risk management; configuration and change management; and reliability, maintainability, and availability management.
- c. Use performance-based metrics (e.g., failure rates, down-time analysis) to develop options for long-range planning and the evolution of the system. The contractor shall also identify evolutionary updates to engineering and logistics activities, such as training, procedures, sparing, and staffing, and system maintenance, sustainment, and modernization.

#### **C.5.3.2 SUBTASK 2 – ENGINEERING, RESEARCH AND DEVELOPMENT (R&D) INCLUDING FIRST ARTICLE TESTING**

The contractor shall:

- a. Prepare system salient characteristics for the product and/or system, to include requirements and corresponding quality assurance (Section F.3, Deliverable 21).
- b. Fabricate, integrate, build, test, and deliver systems IAW this specification with all associated mission equipment hardware and software.
- c. Conduct a System Requirements Review (SRR), Preliminary Design Review (PDR), and Critical Design Review (CDR) and as-needed interim reviews IAW DOD-STD-5000 and/or other applicable guidance (Section F.3, Deliverable 22).
- d. Produce bread and brass boards or other prototypes, integrated to support separate but related activities. The contractor shall produce: first-level models that are typically integrated as an exact example of the current production run and provided to the

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production site as a visual example of production container; and second-level models that are integrated and serves to define form, fit, and function for follow-on production runs, and to serve as a troubleshooting platform for the current production run.

- e. Conduct applicable System-level Testing and Evaluation (Section F.3, Deliverable 23) IAW the system acceptance test plan at the designated Government or contractor facility, and provide the test report to the Government to demonstrate proof of concept or milestone achievement. As required, the contractor shall provide a remedy to address testing failures and maintain the overall program schedule.
- f. Develop an Integrated Master Schedule (IMS) or other schedule of all major activities related to the completion of the system, using the designated software (e.g., Microsoft Project) and depicting the critical paths in the processes.

### **C.5.3.3 SUBTASK 3 – SYSTEM INTEGRATION AND PRODUCTION**

The contractor shall:

- a. Support integration of new equipment technologies into existing system architectures. The contractor may apply a system of systems engineering, architecture, integration and lifecycle management approach to fulfill mission objectives and program execution and evaluation criteria requirements. The contractor may utilize C5ISR design concepts to achieve continuous technological improvement and maximize opportunities for product improvement based on emerging technological advances in the commercial marketplace. Commercial products and processes shall be utilized wherever possible.
- b. Provide analysis, design, development and integration and evaluation of equipment and subassemblies (government-owned or contractor-acquired) solutions into a system or systems, to determine if a particular design solution is feasible and achieves maximum compatibility and interoperability (Section F.3, Deliverable 24).
- c. Design and produce systems and subsystems, models, architecture designs, prototype equipment, and modifications to existing equipment. This may include an evaluation of commercial components, parts, accessories, and subsystems as suitable replacements (Section F.3, Deliverable 25).

### **C.5.3.4 SUBTASK 4 – SUSTAINMENT ENGINEERING AND FOLLOW-ON SUSTAINMENT, INCLUDING SPARES, TRAINING AND FIELD SUPPORT**

The contractor shall provide life-cycle engineering services, such as Non-Recurring Engineering Support (NRES), a systematic approach to lifecycle engineering that may include:

- a. Requirements documentation, comprehensive level of system design, and network architecture;
- b. System of Systems integration engineering;
- c. Detailed and compatibility analysis to verify the requirements;
- d. System integration constraints lists;
- e. Mitigation actions;
- f. Prototype redesigns and production upgrades (as required) to meet the customer's approved requirements;

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- g. Analyses of observations, user feedback, lessons learned, and data analysis, engineering troubleshooting during operations to identify and fix issues, on site (if able), and annotate issues for future modifications or training documentation (Section F.3, Deliverable 26);
- h. Executing Change Requests (CRs), which occur after each training and operational event to modify established drawings and instructions (Section F.3, Deliverable 27); and
- i. Providing field support for mission systems, including staffing Field Support Representatives (FSRs) on site and/or by dispatch during the NRES period.

The contractor shall provide sustainment support, to include field support, warehousing, material tracking, and shipping and inventory management (Section F.3, Deliverables 28, 29, and 30).

### **C.5.3.5 SUBTASK 5 – CYBER VULNERABILITY AND MITIGATION ANALYSIS**

The contractor shall:

- a. Perform network defense studies and vulnerability assessments in support of mission needs.
- b. Provide solutions against insider threat problem sets, e.g., behavior analysis for truth, deception, aggression, indoctrination, radicalization and extremism, and identification of markers to develop new models (Section F.3, Deliverable 31).
- c. Develop “assistive analytics” to detect, rank and correlate incidents, and evaluate for collisions between operations to free time for analysis (versus rote data processing tasks).

### **C.5.4 TASK 4 – ENGINEERING, INTEGRATION, SERVICES AND SUSTAINMENT FOR VIRTUAL TRAINING AND ANALYTIC SYSTEMS**

The contractor shall perform engineering, software development, systems integration, and sustainment support to evaluate new technology insertions into existing and future applications. The contractor shall integrate new equipment technologies into existing system architectures or modify existing system capabilities to address new functional requirements.

#### **C.5.4.1 SUBTASK 1 – DATA ANALYTICS INCLUDING ONTOLOGY SERVICES**

The contractor shall:

- a. Perform all range of data science and analytics activities, including data mining, statistical modeling, predictive analytics, optimization, risk analysis, and data visualization, throughout the structured phases of assessment, strategizing, building, management, and enhancement.
- b. Integrate processes, methodologies, and tools such as machine learning algorithms into platforms that support collection, curation, analysis, and action on disparate data sets, and structured and unstructured data to improve decision-making quality and enhance end-user experiences (Section F.3, Deliverable 32).
- c. Utilize capabilities such as artificial intelligence to address complex and repeatable problems, including disciplines such as natural language processing, computer vision, robotic process automation, knowledge management, object and pattern recognition, deception and anomaly detection, data integration, and advanced visualization (Section F.3, Deliverable 33).

**C.5.4.2 SUBTASK 2 – MODELING AND SIMULATION, WARGAMING AND MISSION PLANNING**

The contractor shall:

- a. Provide support for tasks associated with modeling and simulation activities, including multivariate modeling, statistics, mathematics and physics, and forming models to support simulations for decision-making across missions, such as space, intelligence, and enterprise IT (Section F.3, Deliverable 20).
- b. Support simulating real-world environments to provide realism to training and research activities, utilizing environments such as a synthetic Internet to support cyber analysis and a virtual environment using geospatial and sensor-derived data.
- c. Utilize Agile and DevOps methodologies to bring rapid prototyping capabilities to contractor and Government R&D efforts (Section F.3, Deliverable 34), testing ideas, concepts, emerging technologies and designs in realistic conditions to enhance decision-making and readiness levels.
- d. Provide multidisciplinary support for analytic wargaming, leveraging design, forecasting, soft sciences, and modeling techniques to introduce factors such as socio-political changes and test outcomes in advanced wargaming.
- e. Support wargaming activities and efforts as follows:
  1. *Plan, prepare, and design:* Arranging and managing venues, designing games and supporting workshops, crafting formats and agendas, developing scenarios, conducting research and modeling, literature reviews, acquiring and managing outside expertise and handling logistical activity.
  2. *Execution:* Coordinating details, providing facilitation, managing and/or assisting with reservations and administration, staffing control teams, providing oversight, and ensuring objectives are met.
  3. *Reporting:* Compiling post-game notes, compiling and delivering briefing materials, analyzing results and outcomes, and preparing key findings, proceedings and insights customized by game.
- f. Provide mission planning support, including conducting analysis, interviewing stakeholders, conducting literature reviews and research, hosting events, such as conferences, workshops and games, and creating analytic products, reports, and briefings.

**C.5.4.3 SUBTASK 3 – AVIATION, TECHNICAL TRAINING AND SPACE SYSTEMS**

The contractor shall:

- a. Develop and implement training capabilities to meet the education and training requirements specific to customer requirements and applicable subject matter associated with aviation and other discipline-specific training requirements, including flight simulation, ground maintenance, and other functions. Design solutions, including user interfaces, biometric capabilities, etc., that support aviation and technical training requirements. Use rapid prototyping and other techniques and methodologies to accelerate the development of learning systems (Section F.3, Deliverable 34).

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- b. Create and implement learning management systems that enable content development, creation, storage, reuse, management, and delivery of electronic training from a central object repository.
- c. Leverage artificial intelligence to enable the identification of learner competencies and deficiencies and direct users to areas requiring further work. Create intelligent opponents that adapt to user capabilities and enable training content to adapt to user responses, and offload instructor feedback and other functions.
- d. Capture learner experience data and adapt training to learners' specific training needs and learning pace. Lead and support data analytics to help identify and correlate student performance, improve the training pipeline, and determine points of improvement in existing instruction (Section F.3, Deliverable 35).

### **C.5.4.4 SUBTASK 4 – DATA INTEGRATION FOR FULL SPECTRUM OF LVC TRAINING ENVIRONMENT**

The contractor shall create and maintain the live virtual and/or constructive (LVC) training environment applicable to the requirement. Perform related activities in support of the LVC environment, including services such as:

- a. Planning and conducting preparation tasks and events.
- b. Identifying risks to the environment and anticipating future requirements.
- c. Conducting verification and validation, training, data analysis, and support.
- d. Reporting outcomes and applying continual improvement (Section F.3, Deliverable 35).
- e. Scheduling, monitoring, and synchronizing activities.
- f. Maintaining the LVC environment, network, equipment, and facilities.

### **C.5.5 TASK 5 – POLICY, TECHNICAL, AND RESEARCH SUPPORT**

The contractor shall provide policy, technical, and research support for C5ISR activities focused on sub-surface, ground, air, sea, cyber, and space-related technology. This expertise shall include systems engineering and technical support as well as domain-specific expertise. This support shall include in-depth analysis of Government requirements, technology development, and transition processes, including the capabilities and limitations of applicable technologies.

#### **C.5.5.1 SUBTASK 1 – RESEARCH, REQUIREMENTS, AND OPERATIONS ANALYSIS SUPPORT**

The contractor shall:

- a. Provide technical expertise and programmatic support focused on ground, air, sea, cyber, and space-related technology.
- b. Provide systems engineering support to address specific advanced capabilities program needs for in-depth systems research and/or sensors expertise related to the specific program(s) being supported.
- c. Conduct technical and non-traditional collections to support multiple ISR and special communications mission needs, and perform technology trade studies to determine available technology, technology readiness levels, and feasibility of integration with existing capabilities (Section F.3, Deliverable 36).

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- d. Develop system requirements documentation to feed into the Joint Capabilities Integration and Development System (JCIDS) process, and provide system engineering and technical support for the development of future requirements.
- e. Develop a Concept of Operations (CONOPS), and validate CONOPS efficiencies through testing and demonstrations, and include an evaluation for performance modification (Section F.3, Deliverable 39). This support may include services such as data basing capabilities, technical consulting, metrics development, evaluation of adversary capabilities and trends, development of an archetype of selected military profiles, and potential studies and training of Special Operations Forces.
- f. Perform modeling and simulations in support of MDC2 requirements, research objectives, and operations. In such services, the contractor shall apply a standardized, rigorous, structured methodology to create and validate a physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process. Efforts may involve the use of models, including emulators, prototypes, simulators, and stimulators, either statically or over time, to develop data as a basis for making managerial, technical, strategic, or tactical decisions.
- g. Provide subject matter expertise in acquisition, program management, test and evaluation, and technology transition. This may include developing alternative acquisition plan recommendations, based upon technology gaps and capability solutions. Such plans include acquisition strategy options, schedules, acquisition risk assessments, and Government decision milestones.
- h. Provide services for special studies, analyses, and reviews for specified mission area needs for emergent work requirements encountered in the performance of and within the scope of this contract, but not specified as part of the implementation plan. These activities may include, but are not limited to, research and analysis involving specialized expertise in the areas of collection management planning, indications and warning, imagery and geospatial analysis, signals intelligence analysis, cyber operations, perception management strategies, exercises, and war games. The contractor may also provide specialized technical expertise involving analysis of space protection strategies, concepts, and foreign threat intelligence.
- i. Analyze available capabilities to determine which capabilities (or combination of capabilities) can be used to affect adversary vulnerabilities. This may occur across all functional areas in DoD, consider all instruments of national power (diplomatic, informational, military, and economic), and include capabilities employable during all phases of conflict, and those protected as Special Compartmented Information (SCI), Special Access Programs (SAP), and Alternate Compensatory Control Measures (ACCM). This analysis will also result in a capabilities gap analysis that will highlight the vulnerabilities the U.S. cannot affect with current capabilities. Where applicable, the contractor's analysis shall comply with the JCIDS process for the future integration into the system or force.
- j. Perform additional functions as follows:
  - 1. Participate and organize intra- and interagency workshops and working group meetings related to the MDC2 research project as directed.
  - 2. Apply the engineering and analytical disciplines required to provide the warfighter and technical support community with adequate instruction, including



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applied exercises resulting in the attainment and retention of knowledge, skills, and attitudes regarding the platforms, systems, and warfighting capabilities they operate and maintain.

3. Assist in preparing lifecycle cost analysis/total cost of ownership (TCO) analysis, cost-benefit analysis, cost comparison analysis, business case analysis, trade studies, analysis of alternatives (AoA), and cost as an independent variable analysis (Section F.3, Deliverable 37).

### **C.5.5.2 SUBTASK 2 – POLICY AND ANALYSIS SUPPORT**

The contractor shall:

- a. Provide staff, subject matter expertise and other support to senior decision-makers. The contractor shall provide input for draft language for policies, documents, white papers, and other deliverables.
- b. Support communications requirements of subject programs, information sharing, decision-making, and communications continuity.
- c. Perform analysis and consultation services, formal and informal reviews, and provide timely support and tangible work products. The contractor shall provide technical and documentation analysis on subject areas as directed in work assignments, for subjects such as weapons systems, information management, technology, physical and cyber security, arms control treaties, policies and systems, and issues with any and all of these.
- d. Provide program integration and project management services, financial, physical and cyber security and program office support, document management, deliverables management, investment planning, readiness support, and task management.
- e. Deliver white papers, policy analyses, reports and reviews, and provide document preparation capabilities IAW submission requirements to primary and indirect government recipients (Section F.3, Deliverable 22).
- f. Support relevant professional, technical, steering and special-interest groups, and participate in their activities, including hosting and managing meetings and preparing meeting agendas.